

**New Center
of Scientific Excellence
in Asia**

**G P Yeh
Fermi Lab**

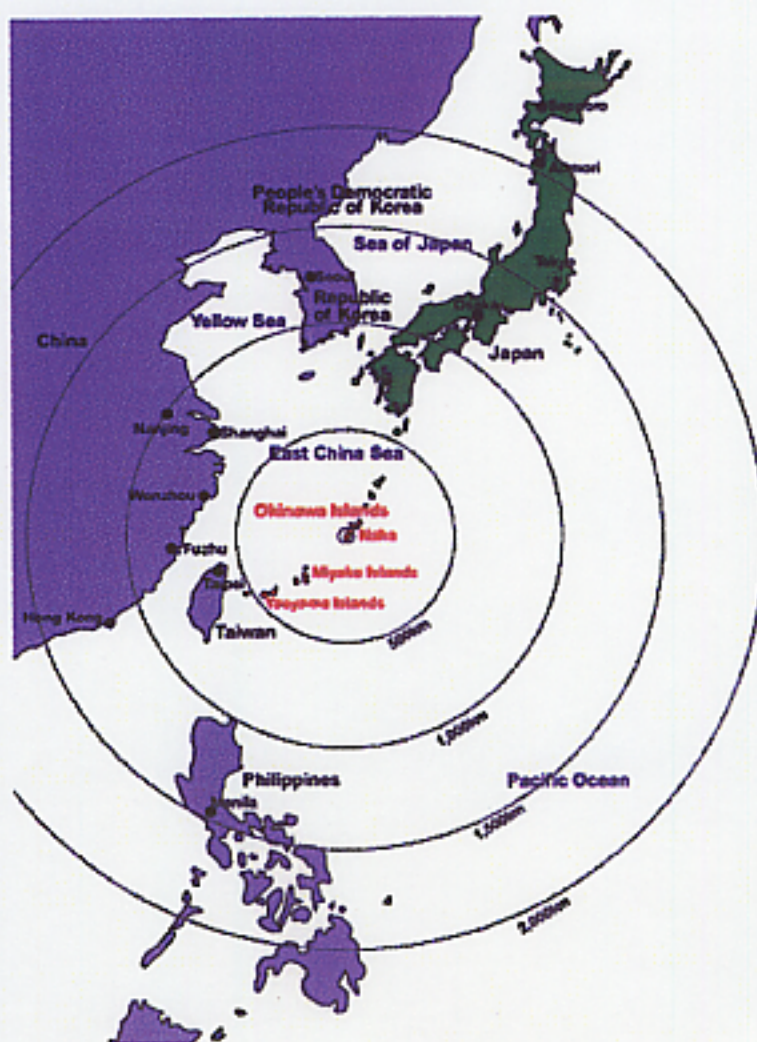
www-cdf.fnal.gov/cd/gp.html

International graduate university of Science and Technology in Okinawa

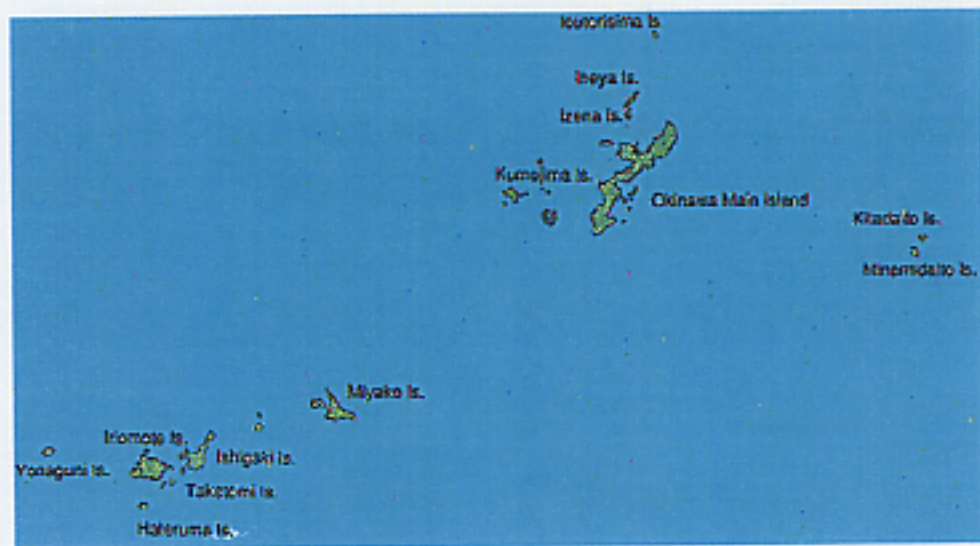
Outline

- What
- Where
- Why
- How
- How much
- Who
- When

Orientation maps.



Whole Isles of Okinawa Prefecture



400 Km

1,000 Km

[back to overview of Okinawa](#)

49 islands inhabited
110 UNinhabited

1 Wind Farm

Aerial Photographs of U.S. Facilities <38 facilities>



Area

Resort Islands

Okinawa 463 sq. mile 1200 km²
+ 3 small islands via bridges

Oahu 607

Kauai 552

Maui 728

Bali 219

Rhode Island 1214

Okinawa total 885 mile²

1,000 × 400 km² 99.4 % ocean

Okinawa

- 605 AD, "Ryukyu" appeared in Chinese history
- 1429 Sho Hashi unified the 3 Ryukyu Kingdoms
- **Bankoku Shinryo** Bell (Bridge for the world)
commissioned by Ryukyu King Sho Taikyū in 1458
Kingdom of Ryukyu as a central point for trade
among China, Korea, Japan and Southeast Asia
during the 15th century
- taken over by Shimazu lords of Satsuma in 1609
- UNESCO World Cultural Heritage 9 sites
- Big battle in WW II
- **G8 Summit** July 21 - 23, 2000
Canada, France, Germany, Italy, Japan, Russia, UK, USA
- 300,000 descendants of Okinawan emigrants worldwide
- Population \approx 1.3 Million
- Tourism 200,000 in 1971
5,000,000 in 2002

Okinawa

Astronaut Mamoru Mouri
probed the ocean bed near Okinawa
6500 meters depth inner space
also now famous but mysterious undersea remains
near Yonaguni Island

During the peak season, Feb. 15 - March 10,
about 600 whales
90% chance to see whales on whale watching tours

Resort Island

Tourism is main business
Beaches Parks Tropical forests
"best in the world" Scuba Diving & other sea sports
Golf courses
Spring Training 6 Japanese Pro Baseball teams



Beginning

- October, 2000

discussions with Governor and others
in Okinawa

IT, Tech Park, international school
collaborations with Fermi Lab

- April, 2001

Prime Minister Koizumi

Minister Omi

Science and Technology Policy of Japan

Okinawa and Northern Territories Affairs

discussion with:

Governor

Former Minister of Education Arima

wanted reform of universities

> 2 graduate universities in Japan

Graduate universities/programs in Asia

Graduate University for Advanced Studies	SoKenDai	'88
Japan Advanced Institute of Science and Technology, Ishikawa 676 Masters 235 Ph. D. students total in 2003	JAIST	'90
Nara Institute of Science and Technology 1793 Masters 189 Ph. D. granted in 2003	NAIST	'91

Science Magazine March 21, 2003

New graduate university Okinawa, Japan	Japan Gov.	Natural Sciences	9/07
Bio MAX Center Seoul, South Korea	Seoul National University	biotech	1/03
Seoul Information Tech University Seoul, South Korea	Private	IT	3/03
Taiwan Intl Graduate Program Taipei, Taiwan	Academia Sinica	graduate education	pending approval

150 universities & colleges in Taiwan

Some of the Ideas

- English as the language on campus
- Students, Faculty, Staff, Administration, Trustees
all international
- Independent Organization
“contract” from the Japan government
& operate the university
- Best Research

Japan's Basic Plans for Science and Technology

1996 - 2001 17 trillion yen \$ 156 Billion

1996 - 2001 17.6 trillion yen \$ 163 Billion

40 % increase over previous 5 years

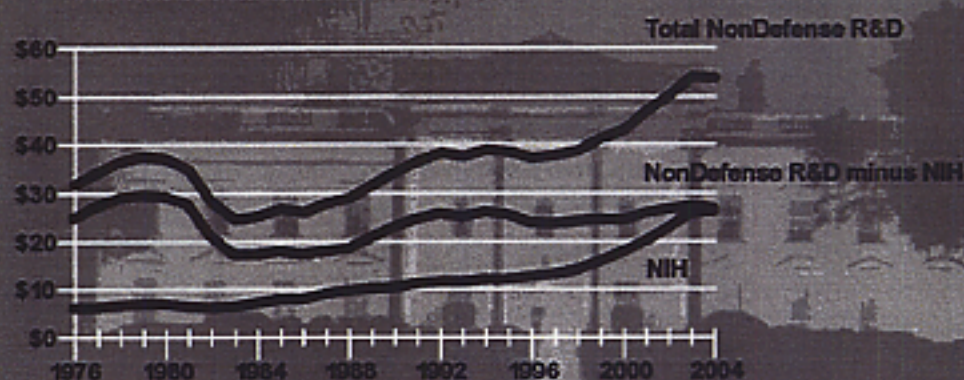
2001 - 2006 24 trillion yen \$ 223 Billion

36 % increase

1% of GDP

Selected Trends in NonDefense R&D FY 1976-2004

In billions of CONSTANT FY 2003 dollars



Marburger on visas: "We have to make [the system] work."

 [E-MAIL THIS PAGE TO A FRIEND](#)

ON THE WEB:

American Association for the Advancement of Science: <http://www.aaas.org>

last modified 4/25/2003 email Fermilab

Security, Privacy, Legal

 Fermi National Accelerator Laboratory

From my personal experience:

MIT

Stanford

Caltech

- **best** world leaders in Science and Technology
best Research opportunities
even for undergraduate students
Graduate students, Postdocs, Faculty
research, thinking, innovation, discovery
- **International** best talents from the world
- **Flexible System** always evolving **Everything is possible**

Fermi Lab

- **Best** World Leader in High Energy Physics
also Astrophysics Cosmology
- **Technology** Accelerators Superconducting Magnets
Computing Electronics Detectors
Neutron & Proton Therapy
- **International** best talents from the world
100 universities/laboratories from U.S.
100 from 35 other countries
- **Universities Research Association** oversees
contract from U.S. Dept. of Energy

Fermilab Users

In 1997, Fermilab users came from 98 U.S. institutions in 36 states and 90 foreign universities in 20 countries.

U.S. Institutions

Alabama

University of South Alabama

Arizona

University of Arizona

California

California Institute of Technology
Univ. of California, Berkeley
Univ. of California, Davis
Univ. of California, Irvine
Univ. of California, Los Angeles
Univ. of California, Riverside
Univ. of California, San Diego
Univ. of California, Santa Cruz
Lawrence Berkeley Laboratory
Lawrence Livermore Laboratory
Stanford University

Colorado

University of Colorado at Boulder

Connecticut

Yale University

Florida

Florida State University
University of Florida

Georgia

Georgia State University

Hawaii

University of Hawaii at Manoa

Illinois

Argonne National Laboratory
University of Chicago
Elmhurst College
Fermilab
Univ. of Illinois, Chicago Circle
Illinois Institute of Technology
University of Illinois, Champaign
Northern Illinois University
Northwestern University

Indiana

Ball State University
Indiana University
Notre Dame University
Purdue University
Valparaiso University

Iowa

Iowa State University
University of Iowa

Kansas

Kansas State University

Kentucky

University of Louisville

Louisiana

Louisiana State University

Maryland

Johns Hopkins University
University of Maryland

Massachusetts

Boston University
Brandeis University
Harvard University
University of Massachusetts
Massachusetts Inst. of Technology
Northeastern University
Tufts University

Michigan

University of Michigan, Ann Arbor
University of Michigan, Flint
Michigan State University

Minnesota

University of Minnesota

Mississippi

University of Mississippi

Nebraska

University of Nebraska

New Jersey

Princeton University
Rutgers University

New Mexico

Los Alamos National Laboratory
New Mexico State University
University of New Mexico

New York

Brookhaven National Laboratory
Columbia University
Cornell University
SUNY at Albany
SUNY at Stony Brook
New York University
University of Rochester
Rockefeller University

North Carolina

Duke University
University of North Carolina

Ohio

University of Cincinnati
Ohio State University
Ohio University
Xavier University

Oklahoma

University of Oklahoma

Oregon

University of Oregon

Pennsylvania

Carnegie-Mellon University
Pennsylvania State University
University of Pennsylvania
University of Pittsburgh

Puerto Rico

Univ. of Puerto Rico, Mayaguez
Univ. of Puerto Rico, Rio Piedras

Rhode Island

Brown University

South Carolina

University of South Carolina

Tennessee

Oak Ridge National Laboratory
University of Tennessee, Knoxville
Vanderbilt University

Texas

Ablene Christian University
University of Houston
Prairie View A&M University
Rice University
Southwestern Medical Center
Texas A&M University
University of Texas at Arlington
University of Texas at Austin
Texas Tech University

Virginia

University of Virginia

Washington

University of Washington
Western Washington University

Wisconsin

University of Wisconsin, Madison

Foreign Institutions

Argentina

Universidad de Buenos Aires

Brazil

CBPF
Univ. Federal do Paraiba
Univ. Federal do Rio de Janeiro
Universite of Sao Paulo

Canada

CIPP
McGill University
University of Toronto
Vanier College

Colombia

Universidad de Los Andes
(Colombia)

England

University of Bristol
University of Oxford
Rutherford-Appleton Labs
Sussex University

France

Cen-Saclay
LAPP, D'Annecy-Le-Vieux
Universite de Lausanne

Germany

Freiburg University
University of Karlsruhe
Max-Planck Institute
University of Wuppertal

Greece

University of Athens

India

Delhi University
Panjab University
Tata Institute

Israel

Technion-Israel Inst.
University of Tel-Aviv

Italy

University of Bologna
University of Ferrara
INFN, Frascati
INFN, Genova
University of Lecce
INFN, Milano
University of Milano
University of Padova
University of Pavia
INFN, Pisa
INFN, Rome
University of Torino
INFN, Trieste
University di Trieste

Japan

Aichi Univ. of Education
Gifu University
Hiroaki University
Hiroshima University
KEK
Kinki University
Kobe University
Kyoto Sangyo University
Kyoto University
Nagoya Inst. of Technology
Nagoya University
Un. of Occup. & Env. Health
Okayama University
Osaka City University
Osaka Science Educ. Inst.
Osaka Univ. of Commerce
Soai University
Toho University
University of Tsukuba
Utsunomiya University
Waseda University
Yokohama National Univ.

Mexico

Cinvestav-IPN
University of Guanajuato
Un. Autonoma de Puebla
Un. Auto. de San Luis Potosi

Peoples Republic of China

IHEP, Beijing
Nanjing University
Shandong University

Poland

INT, Krakow

Russia

JINR, Dubna
Lebedev Physical Inst.
Moscow State University
ITEP, Moscow
PNPI, St. Petersburg
IHEP, Protvino (Serpukhov)

South Korea

Chonnam National University
Gyeongsang National Univ.
Korea Adv. Inst. of Science
Korea University, Seoul
Kyungsang University, Pusan
Seoul National University
Yonsei University

Switzerland

CERN
University of Geneva

Taiwan

IHEP, Academia Sinica

Turkey

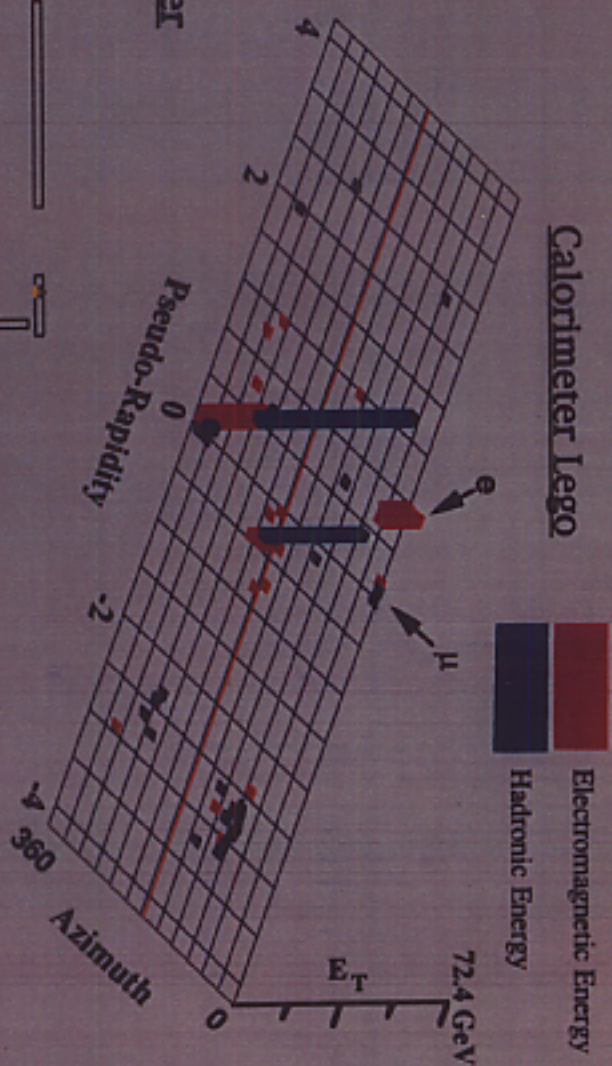
Bogazici University

Quarks : u c t
 d s b
 Leptons: ν_e ν_μ ν_τ
 e μ τ
 Gauge bosons : γ g W^\pm Z^0 G
 Higgs

1897 e (elektron, 600 B.C.)
 1937 μ
 56 ν_e
 62 ν_μ
 68 quarks and g inside p, n
 74 c
 75 τ
 77 b
 79 g
 1983 W^\pm Z^0
 1995 t
 ?
 ? Higgs
 ? SUSY

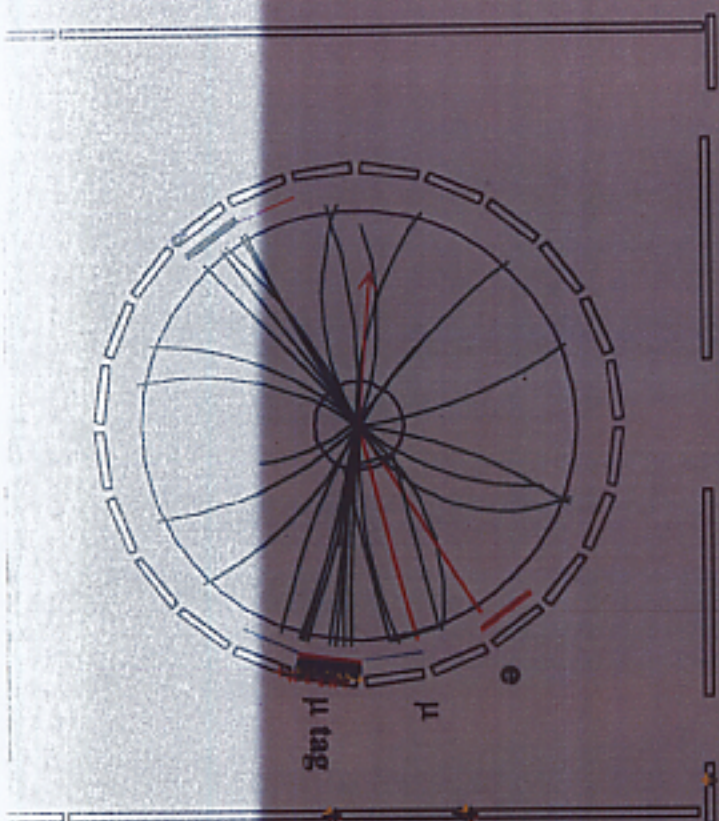
CDF e μ Event '92

Calorimeter Lego

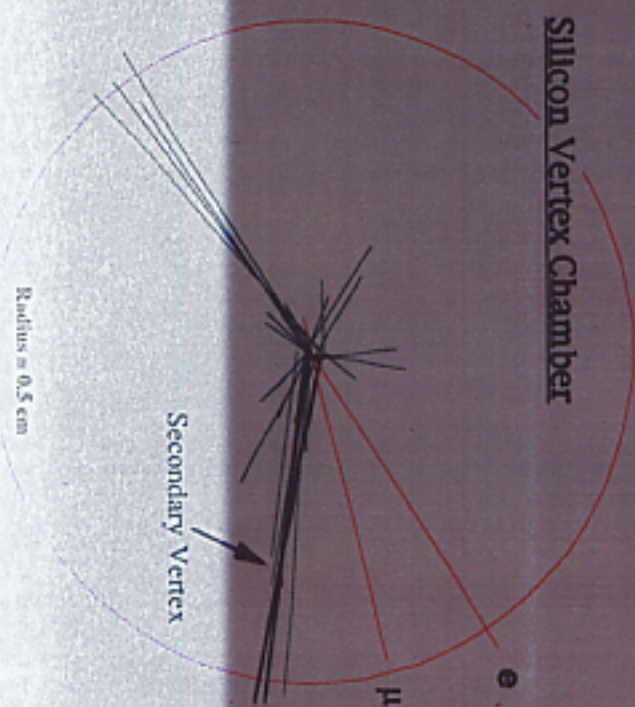


Central Tracking Chamber

and
Muon Chambers



Silicon Vertex Chamber





This penguin is the Linux official mascot, chosen by Linus Torvalds to represent his image of the operating system he created. Others question whether "a fat penguin really embodies the grace of Linux."

Fermilab for Linux

by Sharon Butler, Office of Public Affairs

The 20-something Finnish computer whiz who invented the Linux operating system e-mailed Fermilab last week on learning that the Laboratory would not only be using the free software for its on-line and off-line analyses but had decided to support the system (see www.fnal.gov/cd/CDN/CDN-jan98/cdn-1.html).

"I'm wringing my hands maniacally, and laughing in a very disturbed manner. 'Whahahahhaa, I'm taking over the world, yes, yes, YES!'" Linus Torvalds joked.

On a more serious note, though, Torvalds said he was not surprised. The operating system has always had its base in technical and university research centers.

Just two years remain before Run II. With its explosion in the number of particle collisions, Run II places unprecedented demands on Fermilab's computing facilities. Experimenters will be collecting at least 20 times more data than in Run I, requiring a potentially costly upgrade in the Laboratory's data-processing capabilities.

What to do?

Intel's Pentium-Pro 200-MHz chip, introduced to the market in 1995, opened up the possibility of using commodity PCs instead of the more specialized UNIX workstations used in Run I—at a much lower price.

Add to the PCs the Linux operating system, which is free of maintenance costs, and the savings, Fermilab realized, would become even more significant.

Fermilab began toying with the idea of switching to the more cost-effective PCs fitted

with Linux software, but the idea took off only when G.P. Yeh, a Fermilab physicist in the Computing Division working in the CDF collaboration, got involved.

The crucial question, Yeh said, was "Would it work?"

As a test, Computing Division staff—including Don Holmgren, Don Petravick, Ron Rechenmacher, Jim Fromm, Connie Sieh and Ken Stox—built a small cluster of PCs for off-line data analyses. Yeh had his colleagues in CDF's Taiwan group transfer the collaboration's computing code, which runs on Silicon Graphics and IBM UNIX workstations, to the PCs and make them run using Linux. To their surprise, the task took a mere three weeks—not a year or more as expected. "It was really simple," said Yeh, "because Linux is just a generic UNIX."

Meanwhile, Holmgren and Andy Beretvas, of the Computing Division, ported many of the standard high-energy software programs used in off-line analyses, with equal success.

Yeh and his group went further. They suggested using PCs with Linux operating systems for Level III triggers, computer farms that process the on-line data from a particle detector. In Run I, Fermilab had used high-end Silicon Graphics Symmetric Multiprocessors because of the large network bandwidth required. Advances in switch technology and networking in general have since made the PC option feasible. CDF's Massachusetts Institute of Technology group, which is responsible for upgrading the collaboration's Level III triggers, tried the new idea, and Petravick, Holmgren and Rechenmacher again got involved, figuring out how to interconnect the computers in the high-speed network. No surprise this time. The idea easily worked.

Yeh laughed, "Now people are saying 'It's so obvious, we should use PCs and Linux.'"

Computing Division staff are now supporting Linux. And scientists in the E871 and E815 experiments, the Theoretical Physics Group and the Sloan Digital Sky Survey collaboration are using the PC/Linux configuration.

And so, Yeh said, "we are quietly changing the way we compute."

Torvalds is also pleased. Before he got "completely side-tracked into computers," he wrote, he was "one of the math-physics geeks" and "very interested in particle physics.... I still feel kind of proud that I'm involved even if it is in a fairly distant manner." ■

(Left to right) Ron Rechenmacher, of the Computing Division, Kevin McFarland, a physicist from the Massachusetts Institute of Technology, and G.P. Yeh, a Fermilab physicist, examine Run I data using the new off-line test farm.

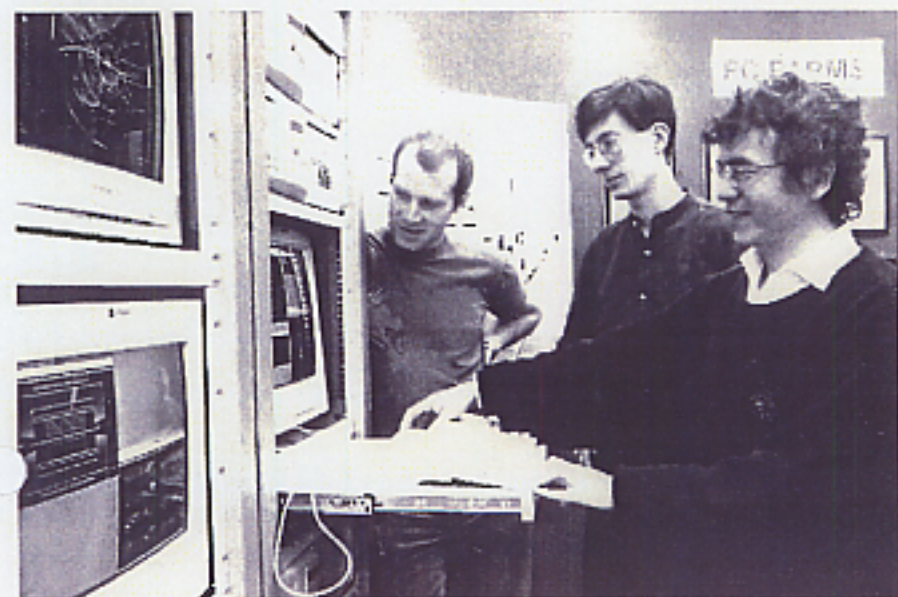


Photo by Heather Mahan

A Geek In Paradise

A trip to see the particle accelerator at Fermilab by a self-professed geek.

by Jon "maddog" Hall

I had been to Fermilab only the year before, but when the invitation came from Dan Yocum to meet at Fermilab's facility outside Chicago, how could I refuse? I am a geek at heart.

Fermilab is short for "Fermi National Accelerator Laboratory", located in Batavia, Illinois. It occupies a parcel of land about three miles on each side (see Figure 1), and houses several accelerator rings which generate (in a very concentrated space) amounts of power greater than those found in the sun or any other place in the galaxy, much less on the face of the earth. They use these fantastic amounts of power to collide various particles at extremely high speed in the search for the basic building blocks of the universe.

In ancient days, various philosophers stated that we would eventually find the "smallest particle", and for a while this was considered to be the atom. In the relatively recent days of discovering nuclear energy, it was recognized that the smallest particle was *not* the atom, but made up of various other parts such as protons, neutrons and electrons. (Students of physics, please have mercy on me as I try to explain this in words that most readers will understand.) During the last quarter of a century, more and more physicists began to believe there were even smaller particles making up the protons, called quarks and gluons. Quarks (having nothing to do with a resident of *Deep Space Nine*) are thought to have six different types, and in 1994 the last of these Quarks, the "top quark", was discovered at Fermilab. Unfortunately, the top quark exists for only a very short (10^{-24} seconds) period of



Figure 2. Dr. G.P. Yeh (third from the left) and Linux supporters: Ruediger Oertel from SuSE, Fermilab System Administrator, G.P. Yeh, Stefan Traby from Quant-X, Larry Augustin from VA Linux Systems, Norman Jacobowitz, Linus Torvalds, Dan Yocum, maddog and Matthew Cunningham



Figure 3. No, it's not a set from *Star Wars, Episode 1*, it's the Fermi main building.



Figure 1. Fermi Campus

time, so it is very hard to collect data on it, particularly when it is seen only six times in a given year of running the accelerator. Therefore, Fermilab decided to increase the size and power of its accelerator, so it could see anywhere from 20 to 300 times the number of quarks. Unfortunately, this would take anywhere from 20 to 300 times the amount of power and generate 20 to 300 times the amount of raw data to be seen by the collectors, meaning 1,000,000MB of data would be generated every second. Yes, that is one million megabytes of data per second.

Of course, storing that much data would be very difficult, but fortunately Fermilab had determined they would be able to filter the information and store a smaller subset of it (only 18 to 100MB of data per second) for later analysis. To do this, they would have to increase the power of their computing systems significantly, and their former model of using expensive workstations in a workstation farm would not have been affordable. Enter Linux.

Last year, when people from Red Hat Software and I visited Fermilab while attending Spring Comdex, I was lucky enough to meet G. P. Yeh, a big fan of Linux and one of the physicists who discovered the top quark. He was kind enough to take us on a short tour of the Fermilab facilities and explain the role of Linux within Fermilab. He explained they investigated Linux and proved that inexpensive PCs running Linux could do the job more than adequately for a price they could afford. They estimated they would need about 2,000 CPUs working together.

This year, when Dan Yocum heard that Linus Torvalds was speaking at Spring Comdex, he enlisted my help in convincing Linus to make a separate trip to Fermilab to speak to the physicists and their families. This did not take much convincing, since Linus has an interest in math, physics and science.

We met at the hotel where Linus was staying, and with a small group of Linux supporters (see Figure 2), drove to Fermilab. It is quite interesting to approach Fermilab, since the land around the accelerator is flat, with only the main building (see Figure 3) rising up from the ground to any height. It would definitely be a great scene for a science fiction movie.

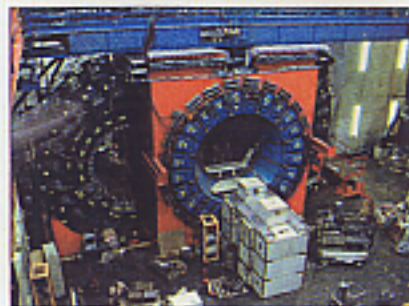


Figure 4. Collider Rings

We parked the car, went inside and met Dr. G. P. Yeh (who everyone calls "G.P.").

G.P. took us on an extended tour, beginning with the top floor of the main building, looking out over the collider rings. "As far as you can see in every direction is Fermilab", G.P. said. It was an impressive sight. He then took us to see the collider detectors (see Figure 4)—"It weighs only 100 tons and cost about 100 million dollars." Finally, we visited the computer room, where the Linux Farms were going to be placed (see Figures 5 and 6). Fermilab calls their systems "Farms" rather than Beowulf systems. They have master machines that delegate the work to many slave processors, connected by high-speed networking and switches. They are not planning on buying the 2000 CPUs until very close to the time they need them. After all, prices keep dropping and capabilities keep increasing, so why not wait until the last moment to get the best "bang for the buck"?

After the tour was over, we went to the main auditorium where Linus



Figure 5. Computer Room—stacks of Linux boxes



Figure 6. Linux Farms: Larry Augustin from VA Linux Systems, Dan Yocum from Fermilab

gave his talk. For those of you who have heard Linus give a speech, you know he does not like to talk with prepared slides, but instead gives a short prepared talk, then answers questions. This night was no different, other than the topic and complexity of the questions. It was obvious from the questions asked that the audience had more of a computer science bent than other, more general audiences. Questions regarding symmetric multi-processing and the reality of distributing interrupts over multiple CPUs entered the air.

After a significant amount of time answering questions and signing autographs, our little troupe went to the home of Jeff Gerhardt to enjoy pizza and "refreshments". We were greeted by smoke rolling out of the front door, reminding everyone it is best to take the pizza out of the box before warming it in the oven. When the smoke died down, some interesting home brew made its way to the front, and everyone enjoyed the pizza and brew (see Figures 7 and 8).

I love this type of computing where people push the envelope of what the human mind can conceive, and I thank the government of the United States for helping to fund such a quest.



Jon "maddog" Hall is Senior Leader of Digital UNIX Base Product Marketing, Digital Equipment Corporation. He is Executive Director of Linux International.




Figure 7. Party Time: Linus on left by lamp, G.P. Yeh in far chair, Stefan Traby in far right



Figure 8. Jeff Gerhardt's hospitality (and kitchen) were enjoyed by all.



Figure 9. G.P. Yeh shows map to Linus Torvalds and Stefan Traby. World Domination begins at Fermilab!



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- Distributions
- Applications
- Linux Books

Linux System Labs Australia
A division of Tesla Linux

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Resources for Linux Minds™

Inside The Tent

"I actually think that operating systems should be invisible. People should take them for granted."

—Linus Torvalds

THERE WAS A BLIP ON THE SCREEN, something new in the field. At first barely visible. It had appeared slowly and almost imperceptibly. Indeed, at first it had been difficult to see there was anything at all. No, this was not some dramatic sighting, no alien mother ship suddenly blazing its way across the screen.

The first time that engineers at silicon giant Intel Corp. had the first inkling of change was when scientific labs across the country began demanding that it port its "math libraries" to a new operating system. For one, Dr. Yeh, a Taiwanese scientist at Midwest-based Fermilab, had made such a plea in early 1998. Fermilab, the federally funded atom-smashing think tank overseen by the U.S. Department of Energy, was a mecca for the world's top nuclear physicists. It had quietly added a new flavor of system software to its roster of those driving the lab's network of computers.

Such sites were known in the computer industry as "early adopters," technically savvy users that often were the first to install leading edge products before the market had fully accepted them. One of the

critical benefits of the new software Fermilab had installed was that it was almost crash proof, and—even more importantly—scientists could freely tinker with its source code, the guts of any piece of software.

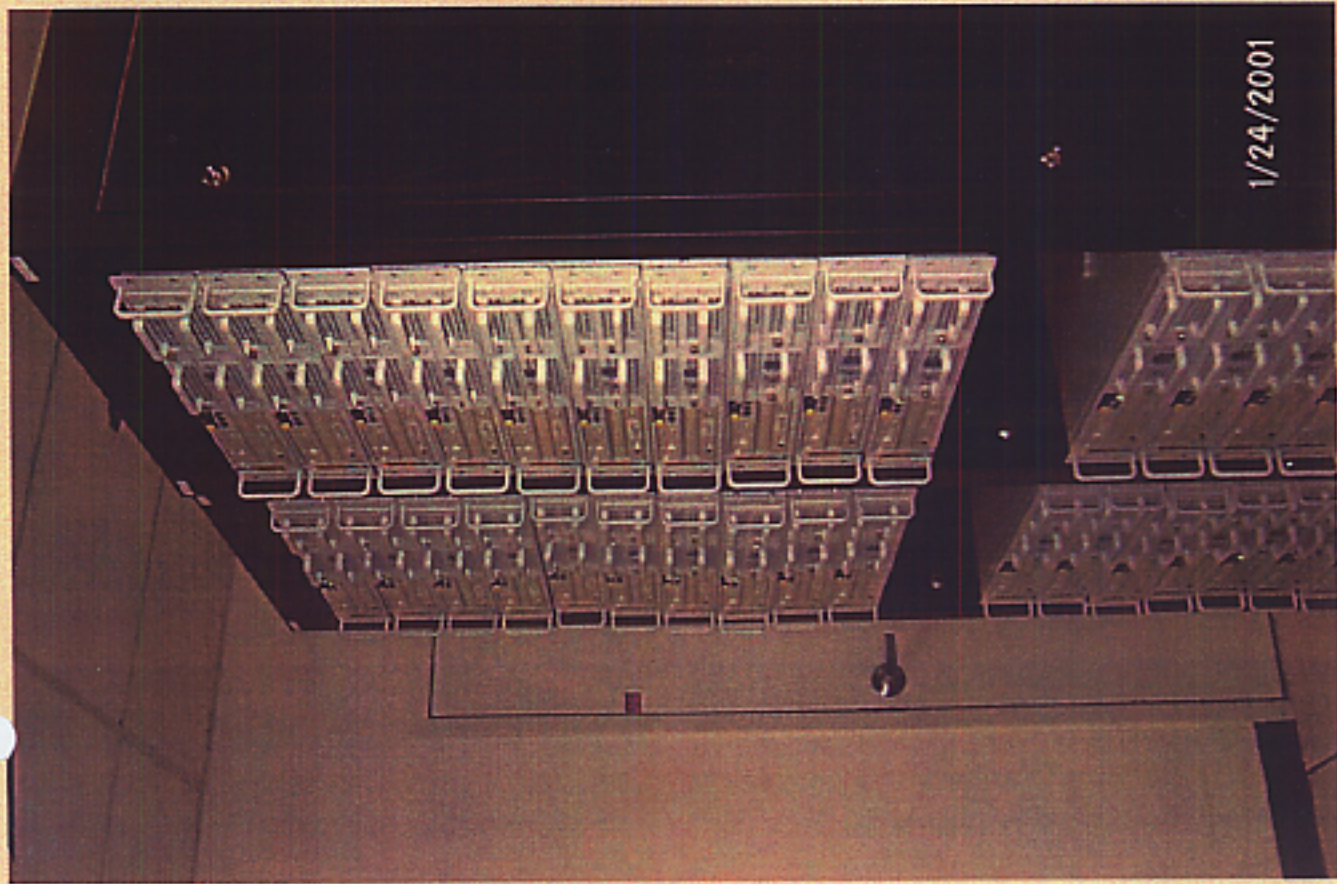
This was not the norm in the Microsoft-dominated software industry. Source code was like a secret chamber that few were allowed to enter. By keeping this code to themselves, software companies kept control of their customers, dictated technological change, and ensured continual revenue streams. With the source code kept secret and inaccessible, customers were locked into continual operating system upgrades dictated by the supplier. Likewise, application software creators depended on the internal workings of the operating system, and were often put at a disadvantage by the suppliers' secrecy.

"We need your math libraries to run under Linux," a number of Fermilab scientists repeatedly told Intel.

Linux. Barely a soul at Intel knew the first thing about it. To a \$25 billion-a-year American corporation that had sealed off its prized programmers and engineers from the rest of the world with electronic firewalls and CIA-like security, it seemed like a seething and untrollable underground of hackers.

On their own, such requests would not have caused much notice inside the giant corporation and would have remained an oddity. But something startling was going on, the type of thing that made a corporation like Intel turn on a dime. Literally.

While the phones were ringing at Intel with similar requests from laboratories all over the world, the chip gods quietly perused the results of a confidential market study, and chairman Andy Grove pulled a low-profile line manager into his office.



September 4, 2001



Stephen Wolbers, CHEP2001,
Beijing, China

Science and Technology

- Physics
 - quarks leptons
 - the most basic particles in the Universe
 - Astrophysics Cosmology
 - the largest structures of the Universe
 - Atomic Molecular Condensed Matter
 - Biophysics
- Chemistry
 - structure and reactions of atoms and molecules
 - Biochemistry
- Bio-Medical
 - Genomics DNA Protein Cells Pharmacology
- I T
 - Large Scale Computing Data Mining
 - Information Science and Technology
 - Bioinformatics
- Engineering

Multi-Interdisciplinary Collaboration

World Wide collaborations

Great models

Fermi Lab

- High Energy Physics Quarks Leptons
- Computing & other technologies
- Astrophysics Cosmos Universe

CERN

World Wide Web

“But what is more exciting is that science creates possibilities that were not imagined previously. After all, only ten years ago researchers in elementary particle physics were determined to find a way in which they could share information more effectively. Out of this seemingly simple aim, Tim Berners-Lee invented the World Wide Web”.

“This is the best recent example of the hidden power of science. We use these devices and don't even think about them being creations of science. In the case of the Web, particle physicists created
a great equalizing, democratic force. ”

Tony Blair,
British Prime Minister
May, 2002 at the Royal Society

International Space Programs



World Wide Collaborations

Fermi Lab

Argonne

MIT Caltech Stanford

and other best institutions

all of Japan

Singapore

Taiwan

Korea

China

Asia

Europe

Okinawa

Center of Asia

- Close to mainland Japan, Taiwan, Philippines, Hong Kong, China, Korea
- > 40% of fiber cable to Japan
- **International**
 - S & T should gather World wide talents
 - some projects require Large Scale collaboration
 - Strong support by Japan & U.S.
 - U.S., Taiwan, Philippino people in Okinawa
- **Strong Local Support**
 - already supporting young people in Fermi Lab,
 - mainland Japan, Taiwan, U.S.
 - planning industry, tech park, economic development
- **Beautiful islands, very nice people**
 - very flexible

**Best home in Japan & Asia
for the international graduate university**

Need

best from everyone

Japan Government

Okinawa Government

the local City

the people of Okinawa

Ryukyu University & other universities

U.S. communities in Okinawa

world wide Scientific Communities

Industry Leaders

best site

nice campus and environment

President Kennedy

- “In 10 years, we will land on the moon”
At that time it seemed impossible
but everyone worked for the same goal
so the dream came true
- “Ask not what your country can do for you,
Ask what you can do for your country”

We can create the best Graduate University

We must ask: What's best for the University

The Best for the University will be great for everyone

Together we can succeed

世界的な生物科学者らと交流し、
研究の発展に貢献する。



太学院大学

M-I-Tをモデルに

第2回検討会
委員の提言

米国の視察を提案

「米国の生物科学者らと交流し、
研究の発展に貢献する。」

米国の生物科学者らと交流し、
研究の発展に貢献する。

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MIT

- 5,000 graduate students, & 5,000 undergrads
- 109 foreign countries
 - 8 % of undergraduate
 - 37 % of graduate
- 956 Faculty members,
total teaching staff > 1,520
- 28 Departments



Leland H.
Hartwell

Eight from MIT win Nobels in 5 fields; Kofi Annan's Peace Prize caps week

OCTOBER 12, 2001
Contact Information

Eight Nobel Prize recipients with MIT connections won Nobel Prizes in five fields this week—medicine, physics, chemistry, economics and peace.

The Peace Prize award Friday to the United Nations and Kofi Annan (MIT S.M. 1972) capped a week in which a current professor, a former professor and six alumni shared the prestigious prizes.



Wolfgang
Ketterle

MIT President Charles M. Vest commented, "It is thrilling and absolutely extraordinary that eight people who have taught or studied at MIT are among the 13 Nobel Prize winners in physics, chemistry, biology, economics, and peace. This is testimony to the excellence of students and faculty who are attracted to MIT, and to our dedication to intense work in fields of fundamental importance. Among the winners I know personally, the quality and creativity of students at MIT is frequently cited as a great strength of MIT."



Eric A. Cornell

"Looking at the history of the Nobel Prizes in recent years, it is noteworthy that in many fields, the basic research done early in an individual's career, shortly after attaining a Ph.D., is the work that is rewarded years later with the Nobel Prize," Vest said.

MONDAY--PHYSIOLOGY OR MEDICINE

Leland H. Hartwell (MIT Ph.D. 1964), director of the Fred Hutchinson Cancer Research Center and professor at the University of Washington, shared the Nobel Prize in physiology or medicine with two British scientists, R. Timothy Hunt and Sir Paul M. Nurse of the Imperial Cancer Research Fund in Hertfordshire and London.



Carl E. Wieman

The award was given for their discovery of key molecules that regulate how cells multiply in living things. Hartwell, who studied at MIT under the mentorship of Professor Boris Magasanik, won the award for his 1970-71 experiments at the University of Washington.

TUESDAY--PHYSICS



K. Barry
Sharpless

Wolfgang Ketterle, John D. MacArthur Professor of Physics, on Tuesday shared the Nobel Prize for physics with Eric A. Cornell, a 1990 MIT Ph.D. recipient and now a senior scientist at the National Institute of Standards and Technology (NIST) in Boulder, Colo.; and Carl E. Wieman, a 1973 MIT physics graduate and a physics professor at the University of Colorado at Boulder. Cornell studied under MIT physics professor David Pritchard and Wieman studied under MIT physics professor Daniel Kleppner.

They won the award for discovering a new kind of matter in the Bose-Einstein condensate, an ultra-cold state of matter in which atoms "sing in unison." The new state of matter was predicted in 1924 by the Indian physicist Satyendra Bose and Albert Einstein.

TUESDAY--CHEMISTRY



George A.
Akerlof

K. Barry Sharpless, an MIT chemistry professor for 17 years until he joined Scripps Research Institute in 1990, on Tuesday shared the 2001 Nobel Prize in chemistry with retired Monsanto Company chemist William S. Knowles and Professor of Chemistry Ryoji Noyori of Nagoya University.

They won the Nobel for developing molecules that can catalyze important chemical reactions so that only one of two mirror-image forms is reproduced. Such knowledge could have prevented the thalidomide disaster in the 1960s, which was caused by a molecule with the harmful mirror image.



Joseph E. Stiglitz

Sharpless started his quest for a practical catalyst for asymmetric epoxidation while at MIT and completed his quest at MIT, following a key breakthrough that took place in January 1980 at Stanford, where he taught for three years. He then moved back to MIT and fully developed the process now known as the Sharpless Asymmetric Epoxidation and the Sharpless Asymmetric Dihydroxylation.

THURSDAY--ECONOMICS



Kofi Annan

George A. Akerlof of the University of California at Berkeley and Joseph E. Stiglitz of Columbia University, both of whom earned the Ph.D. from MIT in economics in 1966, shared the Nobel Prize in economics with Michael Spence of the Stanford Business School.

They studied the economics of goods where the buyer and seller have imperfect information. The prize was awarded "for their analyses of markets with asymmetric information." Both Akerlof and Stiglitz studied at MIT with Institute Professor Emeritus Robert Solow, who won the Nobel Prize in economics in 1987.

FRIDAY--PEACE

Kofi A. Annan, Secretary-General of the United Nations, who earned his S.M. in management in 1972, shared the Nobel Peace Prize with the United Nations. The prize



California Institute of Technology

Caltech Receives \$600 Million in Two Gifts; Largest Academic Donation in History

Gordon & Betty
Moore



PASADENA, Calif. - The California Institute of Technology has received two gifts totaling \$600 million, half from Intel cofounder Gordon Moore and his wife Betty and half from the Gordon and Betty Moore Foundation. Together they are the largest donation ever to an institution of higher learning.

"These gifts are one of the great events in Caltech's history," said Caltech president David Baltimore. "They will allow us to realize research dreams, to maintain our greatness in the many areas in which we are preeminent, and to provide a special Caltech education for generations of students to come. It is testament to the great love that Betty and Gordon Moore have for this community of scholars and of the confidence the foundation has in this institute. The community will forever be grateful for their unprecedented generosity."

Moore, who received his PhD in chemistry from Caltech in 1954, made the announcement at the Caltech Board of Trustees meeting weekend. He said the gift is intended to allow Caltech to continue to do what it does best - collaborative work between disciplines - keep Caltech on the forefront of science and technology.

"Caltech has a unique ability to do multidisciplinary work - partly because of its size and partly because of its history. It is described being a national treasure and it certainly is," said Moore. "The education I received there has served me well. We are hoping this gift position the institute well as it moves forward."

Betty Moore, a graduate of San Jose State College in journalism, is very active in the couple's numerous philanthropic activities. She Caltech has been an important part of her life during her 51-year marriage and she is pleased to be able to support it with this gift.

"We've been very fortunate in our lives and we feel it's time to give back," said Betty Moore. "We enjoy seeing the students and know that we're helping them."

The couple formed the Moore Foundation in November 2000 and set up offices in San Francisco. The foundation's main focus is the environment, scientific research, higher education, and the Bay Area.

The foundation's grants of \$300 million over a 10-year period and the Moore's \$300 million gift over five years are for educational and scientific programs to be mutually agreed upon.

"We are delighted to be able to make significant long-term grants to Caltech. These grants and the projects they will fund will help this outstanding institution remain at the forefront of higher education in the world," said Lew Coleman, president of the Gordon and Betty Moore Foundation.

"The Moore name has long been associated with world leadership in industry and technology," said Benjamin M. Rosen, chairman of Caltech Board of Trustees. "Today, Gordon and Betty Moore extend this leadership to university education and research. From the seminal Moore's Law for semiconductors to this precedent-breaking Moores' Gift for Caltech, this couple's impact on the world at large and on Caltech is remarkable."

In 1968, Moore and a colleague from the Fairchild Semiconductor Division of Fairchild Camera and Instrument in Mountain View created a start-up to focus on large-scale integrated products. They typed a one-page business plan, received \$2.5 million in venture capital in two days, and named the company Intel, short for "integrated electronics."

Among their early successes was the design of a general-purpose logic chip that could execute a string of instructions. This chip changed history by making programmable intelligence so cheap that it could be embedded into household appliances and was powerful enough computers that tackle the largest scientific problems. The microprocessor was hailed as one of the top inventions in American technology history, ranking with the invention of the light bulb, the telephone, and the airplane.

Moore was chief executive officer at Intel from 1975 to 1987, and was chairman until 1997 when he became chairman emeritus. He is widely known for "Moore's Law," which he formulated in 1965. The law stated that the number of transistors the industry would be able to place on a chip would double every year, a trend he forecast would continue through 1975. In 1975 he updated his prediction to occur every two years. While originally intended as a rule of thumb, it has become the guiding principle for the industry, which endeavors to deliver ever more powerful semiconductor chips at proportionate decreases in cost.

Moore, 72, has been a Caltech trustee for 18 years, and served as chairman of the board from 1993 to 2000. The couple's generosity to Caltech has included the establishment of the Gordon and Betty Moore Presidential Discovery Fund, which is intended to allow faculty to explore new and unique ideas. They also funded the G. E. Moore Electronic Materials and Structure Laboratory, the Gordon and Betty





Universities Research Association (URA) is a consortium of 89 leading research-oriented universities primarily in the United States, with members also in Canada, Japan, and Italy.

At the behest of President Lyndon Johnson's Science Advisory Committee and the National Academy of Sciences, the not-for-profit URA corporation was founded in 1965 for management and operation of research facilities in the national interest. Presidents of participating universities organized their scientific and administrative talent toward this end, within the URA governing structure.

URA's charter is "**...to acquire, plan, construct, and operate machines, laboratories, and other facilities, under contract with the Government of the United States or otherwise, for research, development and education in the physical and biological sciences... and to educate and train technical, research and student personnel in said sciences.**"

The corporation acts under the authority of its governing body, the Council of Presidents of its 89 member universities. A Board of Trustees appoints boards of overseers for each major research activity. The Washington headquarters office of URA coordinates the activities of the Council and boards, and is responsible for oversight and governance of the Fermi National Accelerator Laboratory and for corporate relations with the Federal government, industry, academe, and the general public.

Since January 1967, URA has been the prime contractor to the Department of Energy for the creation and operation of Fermi National Accelerator Laboratory near Batavia, Illinois. Fermilab is home to the Tevatron, the world's highest-energy accelerator for elementary particle physics research.

Experiments using the Fermilab Tevatron led to the discovery of the elusive top quark particle in 1995. Fermilab's continuing upgrades have enabled it to remain the center of global research not only on the top quark, but in the search for the Higgs boson, the exploration of neutrino mass, and other phenomena at the frontiers of physics. Fermilab and URA are also increasingly involved in particle astrophysics and related astronomical sciences, through participation in the Sloan Digital Sky Survey, the Pierre Auger Cosmic Ray Observatory Project, and the Cryogenic Dark Matter Search at the



"If we knew what it was we were doing, it would not be called research, would it?"

A. Einstein

"Here in Pasadena it is like Paradise.

Always sunshine and clear air,
gardens with palms and pepper trees,
and friendly people . . ."

A. Einstein

Visiting Professor, Caltech
3 winters, 1931-33

"Okinawa Is Paradise"

Governor Inamine of Okinawa

April, 2002

沖縄新大学院大学構想について

Outline of the New Graduate University in Okinawa

尾 身 幸 次

KOJI OMI

沖縄及び北方対策担当大臣
科学技術政策担当大臣

Minister of State for Okinawa and Northern Territories Affairs
Minister of State for Science and Technology Policy

2002 年 6 月 29 日

June 29, 2002

1. 目的 Objectives

沖縄をアジア・太平洋地域の先端的知的
クラスターとして振興

Make Okinawa the leading
intellectual cluster in the Asia-Pacific
region

世界の科学技術の発展に寄与する。
Contribute to global advancement
of science and technology

沖縄に自然科学系の大学院大学を創設

—世界最高水準の学術拠点として—

A graduate university of science and technology in
Okinawa – the world's highest-level center of
academic excellence

あわせてこの大学院大学を「成功例」として、現在進めてい
る大学改革の一つの契機に

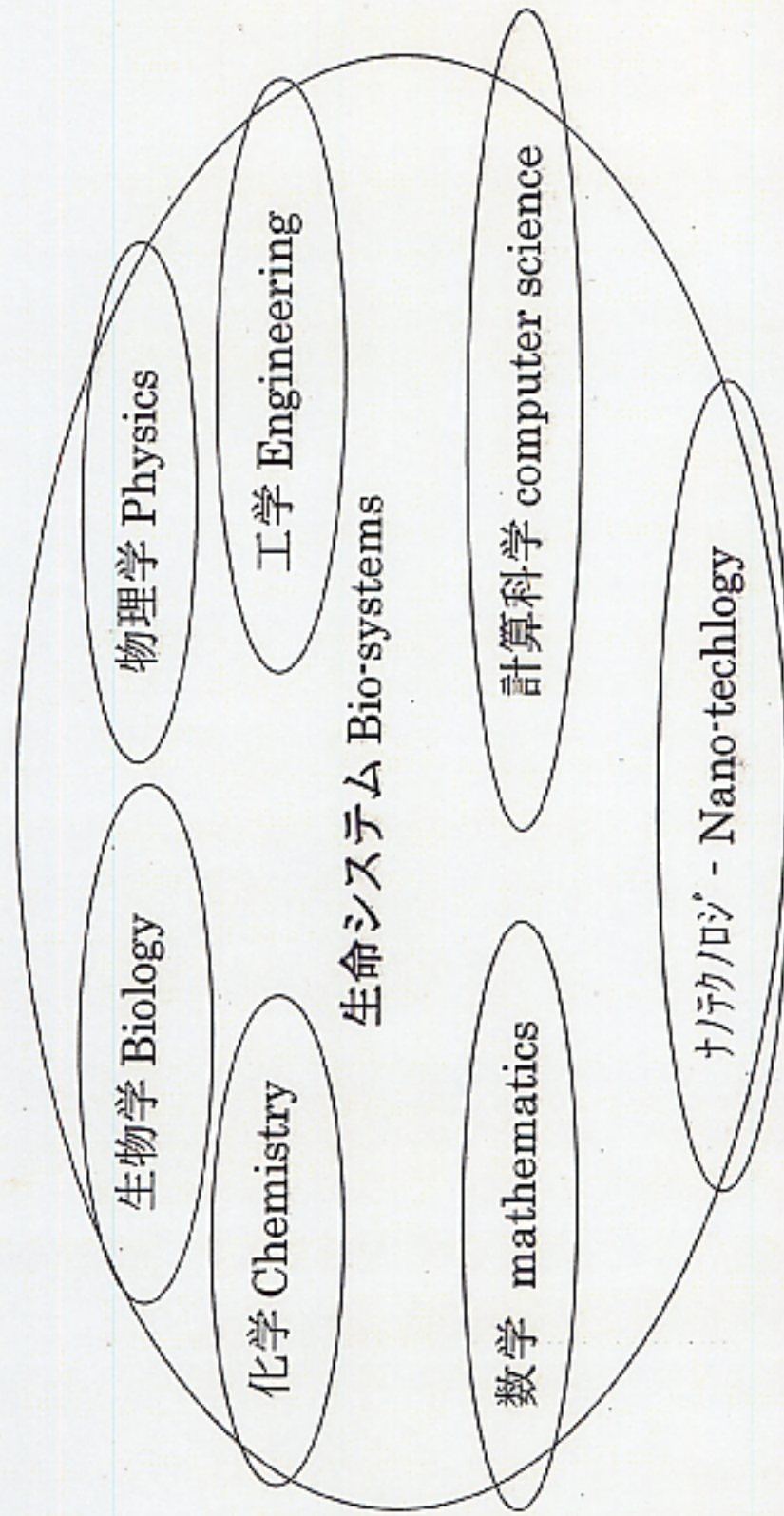
Make this university “a success story”

-an impetus for the reform of Japanese universities

3. 基本コンセプト Basic Concept

- (1) 世界最高水準 (Best in the world)
- (2) 国際性 (International)
- (3) 柔軟性 (Flexible)
- (4) 世界的連携 (Global Network)
- (5) 産学連携 (Collaboration with Industry)

4. 研究・教育分野 Research and Education Fields



- 生物学、物理学、化学、計算科学、工学、ナノを融合する学際的研究
Interdisciplinary approach combining biology, physics, chemistry, computing, mathematics, engineering and nano-technology

5. 世界最高を目指す工夫 Devices for Reaching the Best in the World

- 教授が世界のどこかの学会に出る旅費を必要に応じて補助する。

Offer support for travel expenses, so that faculty can attend academic conferences at any place in the world when necessary

- 沖縄で国際的な会議・セミナーをできるだけ多く開催する

Hold international conferences and seminars as frequently as possible

- 魅力的な給与・研究費の確保

Offer attractive salaries and obtain sufficient research funding

- 優秀な若手研究者に独立の研究室。

Give promising young researchers their own labs

- 世界最高水準を目指す施設・設備の提供

Provide facilities and equipments for reaching the top

- 奨学金・フェローシップの充実

Provide generous scholarships/fellowships

- 広くて快適な教授用住宅、学生寮

Prepare spacious and well-equipped faculty residences and dormitory

- 外国人教授陣の子弟への英語教育プログラムの提供

Provide English-language education programs for children

6 今後のスケジュール目標と準備事業 Schedule Target and Preparatory Work

○2005. 9(Sep) 研究機関としてのスタート Start as a research institute

○2007. 9(Sep) 大学院としてのスタート Start as a graduate university

○ 先行的事業 Preparatory events before the opening of the institute

①新大学院大学の研究テーマに関する国際セミナーの沖縄開催

International Seminar on new institute's research field in Okinawa

②新大学院大学と将来ネットワークを組むグループへの研究助成

Research funding program for the collaborative research bodies to the new institute

○ 設立準備作業 Preparatory work for the establishment of new institute 候補地選定、学長や教授陣の選考、設計・建設等

Site selection, Recruitment of the president and faculty, Design and Construction of the campus etc.

7 規模目標と見積りコスト Size Target of Organization and Estimated Cost

○ 最終的な規模目標 Size of organization (final target)

(7) 教授陣 Faculty	200
(4) 技術・事務職員 Support Staff	300
(5) 学生 Students	500

○ 見積もりコスト Estimated Cost

建設費 Construction	約 800 億円 (about \$600million)
年間運営経費 Annual operating cost	約 200 億円 (about \$160million)

8 設立に向けた沖縄県民の支援 Okinawan People's Support

○ この構想を成功に導くには、沖縄県民の支援が必要。

Okinawan People's support is indispensable for the success of this project

Symposium on the New Graduate University in Okinawa

沖縄新大学院大学シンポジウム

【日時】2002年6月29日(土) PM.2:00~PM.6:00

【会場】万国津梁館会議棟

世界最高水準の

研究・教育

美ら島をアジア・太平洋の知的クラスターに



【主催】内閣府・沖縄県

シンポジウム出席者

Sydney Brenner

1927年1月13日
南アフリカ連邦ジョーミストン
生まれ 英国国籍
・Salk研究所教授
・ケンブリッジMRC分子
生物学研究所前所長
・ケンブリッジ大学教授
・1947年、南アフリカ連邦ウィ
トウォーターズランド大学卒業
・1954年、英国オックスフォ
ード大学博士号取得

利根川 進

1939年9月5日
愛知県名古屋生まれ
・マサチューセッツ工科大学
ガン研究所生物学部教授
・米国学士院会員
・分子生物学者
・1963年、京都大学理学部
化学科卒業
・1963年、米国カリフォルニア
大学サンディエゴ校博士
課程修了
・1967年、ノーベル医学生
理学賞受賞

Jerome I. Friedman

1930年3月28日
米国シカゴ生まれ
・マサチューセッツ工科大学
教授
・1956年、シカゴ大学博士
号取得
・1960年、マサチューセツ
工科大学教授就任
・1983年～88年、同大学物
理学部長就任
・同大学副学長を3年間務
める
・1990年、ノーベル賞(物
理学)受賞

G. P. Yeh (葉恭平)

台湾生まれ
・フェルミ研究所上席研究員
・台湾アカデミー顧問
・沖縄県宜野湾市旧キング
スクールで学び、中学・高
等学校卒業
・マサチューセッツ工科大学
博士号取得
・1995年トップクォークを
発見したCDF (Collider
Detector at Fermilab) の
中心メンバーの一人

新井 賢一

1942年10月18日
東京都生まれ
・東京大学医科学研究所
長兼教授
・医学博士
・1967年、東京大学医学部
医学科卒業
・東京大学大学院医学研究科
基礎医学専攻博士課程修了

内永 ゆか子

1946年
香川県生まれ
・日本アイ・ビー・エム株式会社
常務取締役・ソフトウェア開発
研究所長
・1971年、東京大学理学部
物理学科卒業後、日本アイ
・ビー・エム株式会社入社
・数々の公職を歴任、2000年
に常務取締役・ソフトウェア
開発研究所長就任、現文部
科学省中央教育審議会委員
・その他、1999年、米国WITI
(ウィメン・イン・テクノロジー・
インターナショナル) 殿堂入り

仲井真 弘多

1939年8月19日生
・沖縄電力株式会社
代表取締役社長
・1961年、東京大学工学部
卒業後、通商産業省(現
経済産業省)入省
・1985年、通商産業省(現
経済産業省)技術審議官
・1989年、沖縄電力株式会
社常務取締役
・1990年、沖縄県副知事就任
・1995年、沖縄電力株式会
社代表取締役社長

シンポジウムプログラム

【日時】2002年6月29日(土曜日) 14:00～18:00 【会場】万国津梁館会議棟

■基調講演の部 [14:00～15:40]

- 主催者挨拶
・沖縄及び北方対策担当大臣
科学技術政策担当大臣/尾身 幸次
・沖縄県知事/稲嶺 恵一
- 基調報告1/Sydney Brenner
(ケンブリッジ大学教授)
- 基調報告2/利根川 進
(マサチューセッツ工科大学
ガン研究所生物学部教授)
- 基調報告3/Jerome I. Friedman
(マサチューセッツ工科大学教授)

■パネルディスカッションの部 [15:50～17:10]

- コーディネーター/新井 賢一
(東京大学医科学研究所教授・所長)
- コメンテーター/G.P. Yeh (葉恭平)
(フェルミ研究所上席研究員)
内永 ゆか子 (日本IBM株式会社常務取締役)
仲井真 弘多 (沖縄電力株式会社代表取締役社長)
- パネリスト/Sydney Brenner 利根川 進
Jerome I. Friedman
G.P. Yeh (葉恭平)
内永 ゆか子 仲井真 弘多
尾身 幸次 稲嶺 恵一

- Great Vision, Dedication, Leadership, Hard work

Minister Omi

Governor Inamine

and their great staffs

Cabinet Office Study Committee

Arima

Shiina

Nakaima

Morita

and other Leaders

- Super International Advisory Committee

Friedman

Tonegawa

Wiesel

Brenner

TD Lee

Kornberg

Lederman

Baltimore

Berg

Cech

and other World Scientific Leaders

Because we want to build the best
the best people come and help

12 January 2003

PRESS RELEASE

The International Advisory Committee held its third meeting in Half Moon Bay, California, on January 12, 2003. The Committee is very pleased with the substantial progress made since the last meeting and agreed on the following points:

1. The FY2003 draft budget prepared by the Japanese government represents its commitment to the project to establish a best-in-the-world graduate university in Okinawa. The committee members welcomed this as the "green light" to the project.
2. The report of the Okinawa government was also welcomed that it plans to form a supporting foundation for the project.
3. Firm commitment and continued efforts of the Japanese government, along with a nationwide support of the project, are essential for its success. Continued support of the Okinawa government and its people is also indispensable.
4. The Committee members welcomed the report of the Subcommittee that as a result of its meeting on January 11, 2003, we now have a rather small number of strong candidates for president of the university. The final selection of the president is in progress.
5. The three sites recommended by the Okinawa government are excellent candidates for the campus of the university. The final selection is planned for February. will be made in February based on the results of site visits by the Japanese advisory committee.
6. The framework for the design of the university will be discussed further. In particular, it was pointed out that the research and education fields need more elaboration.

12 January 2003

7. The Working Team made a great progress in the preparation for the first international symposium to be held in Okinawa 16-18 October 2003.

8. A council will be formed as soon as possible after consultation with the Japanese advisory committee to promote the concrete planning of the university. Its chair will be taken by Dr. Friedman with the support of Dr. Brenner as the vice-chairman.

9. The next meeting will be convened when a substantial progress is made or about to be made for report and consultation. The committee members will remain involved and continue to cooperate for the success of this project. The committee members agreed to meet again this year at an appropriate time.

International Members of the Scientific Council
(As of March 14)

IAC Members

- | | |
|-------------------------------|----------------|
| • Jerome Friedman (Chair) | MIT |
| • Sydney Brenner (Vice Chair) | Salk Institute |
| • Arthur Kornberg | Stanford |
| • Leon Lederman | Fermi Lab |
| • Susumu Tonegawa | MIT |
| • Torsten Wiesel | Rockefeller |

Outside IAC

- | | |
|---------------------|-------------------------------|
| • Steven Chu | Stanford |
| • Dudley Herschbach | Harvard |
| • Lee Hartwell | Fred Hutchinson Cancer Center |

Research and Education

- **Physical Sciences**

- Mathematics

- Physics

- Chemistry

- **Life Sciences**

- Biology

- Medical Sciences

- **Computing and Engineering**

- Computing Science

- Information Technologies

- Nanosciences and Nanoengineering

Each must be world class

OUTLINE OF THE DRAFT BUDGET FOR FY2003
WITH RESPECT TO
THE OKINAWA GRADUATE UNIVERSITY

Item	Amount of budget
1. Study and design of the basic plan, campus and facilities	224 million yen (\$2.3 million)
2. International symposium & workshop	132 million yen (\$1.1 million)
3. Research funding	1,013 million yen (\$8.4 million)
Total	1,419 million yen (\$11.8 million)

Note:

- (1) The Japanese fiscal year starts on April 1 and ends on March 31 of the following year.
- (2) This draft budget should be approved by the parliament before it can be implemented.
- (3) The exchange rate for the above table is: US\$1 = 120 yen

PROCESS OF THE SELECTION OF THE CAMPUS SITE

30

3 June 2002	Adoption of the selection criteria by the domestic advisory committee
29 June 2002	Adoption of the selection criteria (and the decision of the timing) by the International Advisory Committee
19 September 2002	Establishment of the prefectural committee for the recommendation of sites
22- 26 October 2002	Field survey of the possible sites by the prefectural committee
2 December 2002	Recommendation of three sites by the prefectural committee to the Governor
4 December 2002	Recommendation of <u>three sites</u> by the Okinawa Prefetural Government to the Cabinet Office Report and discussion on the recommendation of the three sites at the domestic advisory committee
12 January 2003	Report and discussion on the three recommended sites at the third meeting of the International Advisory Committee
January 2003	Field survey of the three sites by the domestic advisory committee
February 2003	Discussion on the three sites by the domestic advisory committee to the Minister
March '03	Decision of the site

3

1

12 January 2003

(This document is the same as that which was distributed at the second meeting of the International Advisory Committee.)

CRITERIA FOR SITE SELECTION

The fundamental principle is to "make this institute the best in the world." Prospective sites for the new institute shall meet the criteria below.

(1) Land area

A site having a land area sufficiently large to accommodate the future growth of the institute and the intellectual cluster surrounding it

(2) Accessibility and environment

- a. Good access to transport
- b. Superior research environment (quiet surroundings, potential as a cluster area for other research institutions, etc.)
- c. Convenient daily living as well as a pleasing natural environment and resort-like feeling

Schools, hospitals, shopping, culture & arts

(3) Ease of acquiring and using land

- a. Maximum cooperation of the local community concerning land acquisition and usage
- b. Consent to acquisition of land on the part of all landowners obtained quickly and easily

Three Candidates for the Campus Site



Onna

Onna Village is located along the beautiful East Coast. The candidate site is located on a forested hill overlooking the sea, situated in a beach resort of

Area 681

Airport Naha

Hospital

Public facilities

Major shopping area

Population of the city 9,730

City area 18



**SITES FOR THE CAMPUS RECOMMENDED
BY THE GOVERNMENT OF OKINAWA PREFECTURE**

	Itoman City	Onna Village	Kita-nakagusuku Village
Land area	120.3ha (297 acres)	279.8ha (691 acres)	46.6ha (115 acres) Surrounding area of 114ha (282 acres) will also be available.
Owner of the land	Public	3.9ha (9.6 acres) local government	6.5ha (16 acres) local, prefectural & national governments)
	Private individual	49.3ha (122 acres) 221 owners	39.2ha (97 acres) 259 owners
	Private corporate	67.1ha (166 acres) 1 owner	0.9ha (2.2 acres) 3 owners
Estimated cost for the acquisition of the land	10.8 billion yen (\$90 million)	13.2 billion yen (\$110 million), or 3.5 billion yen (\$29 million) if the land owned by the village can be lent for free	15.7 billion yen (\$131 million)
Access to the airport	12km (7.5 miles) 30 minutes	40km (25 miles) 50-60 minutes	27km (17 miles) 35-40 minutes

Note:

(1) 1km=0.62 mile (2) 1ha=2.47 acres (3) US\$1 = 120 yen

Selected Site: **Onna, Okinawa**

- Approved by Prime Minister Koizumi
- Announced by Minister and Governor on April 11, 2003
- Area **1.1 sq. mile** **280.4 ha** **693 acres**

Tevatron	πr^2	314 ha	776
MIT			154
Caltech			124
- 87 % free, from local & national governments
- Resort area
- additional land possible for the graduate university
- adjacent/nearby open land available
for science park, tech valley

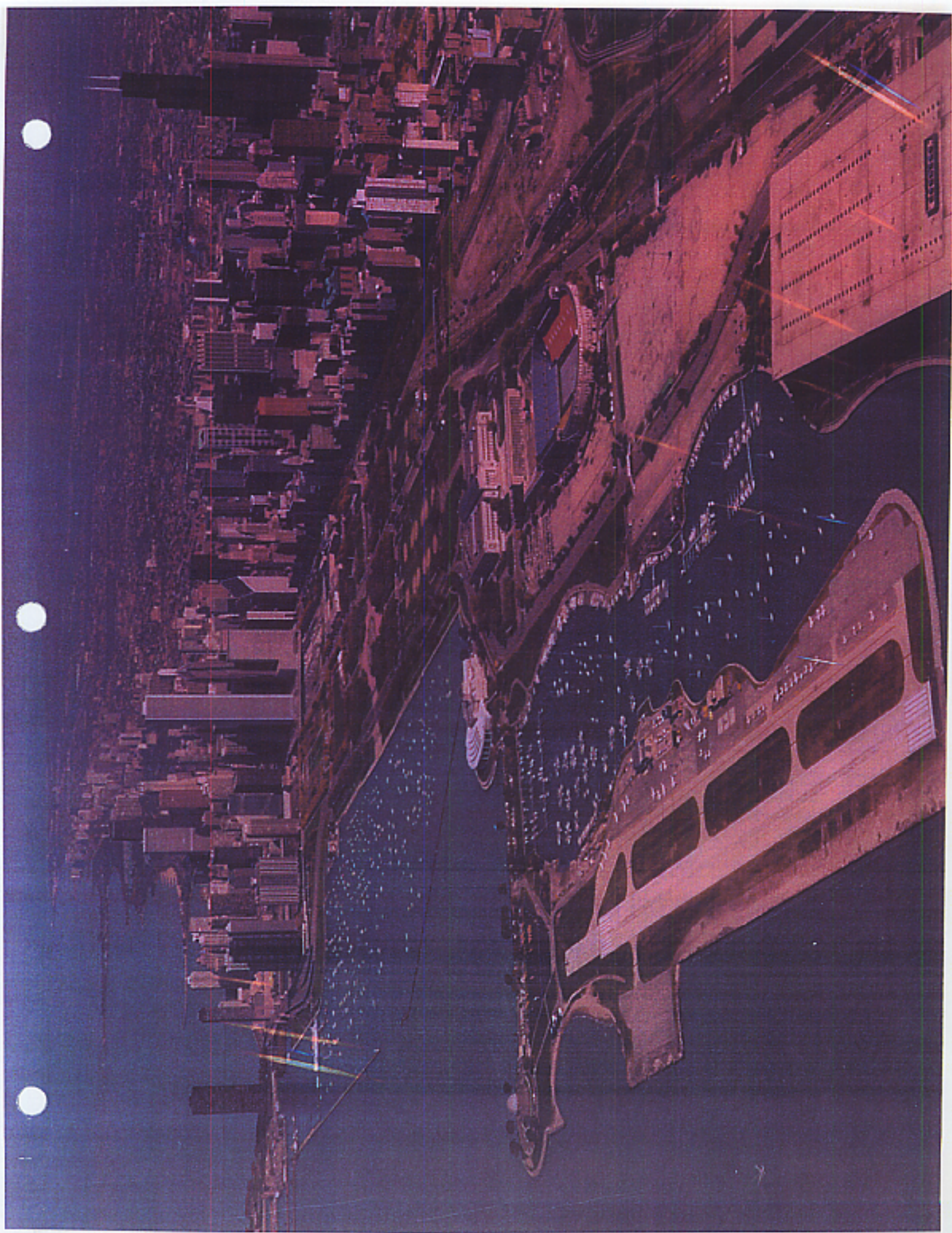
www.vill.onna.okinawa.jp/tour/beach/index.html

“Deep Blue Ocean

White Sandy Beaches”

**Fermilab's Wilson Hall is a landmark for both
the local neighborhood and
the high-energy physics community.**





FEATURES THE 4-WEEK TURNAROUND PLAN

Based on the
**LANDMARK
25-YEAR STUDY**

長 THE 寿
**OKINAWA
PROGRAM**

**HOW THE WORLD'S
LONGEST-LIVED PEOPLE
ACHIEVE EVERLASTING HEALTH—
AND HOW YOU CAN TOO**

BRADLEY J. WILLCOX, M.D., D. CRAIG WILLCOX, Ph.D. & MAKOTO SUZUKI, M.D.



Exercise for mind and body: Toshiko Taira, 80, practices *bashofu* — weaving cloth from the fibers of banana trees — on a loom at a workshop in Ogimi village. Okinawans believe such sense of purpose helps extend life.

By Paul Wiseman, USA TODAY

Fabric of a long life

Centenarians on Okinawa credit healthy diet and youthful outlook

By Paul Wiseman
USA TODAY

OGIMI, Japan — Juan Ponce de Leon and James Hilton had it all wrong. The fountain of youth isn't in Florida, where 16th-century Spanish explorer Ponce de Leon went searching for it. And Shangri-la isn't stuck way up in the Himalayas, where Hilton, author of *Lost Horizon*, placed his fictional paradise, whose inhabitants never aged.

Cover story

The nearest thing to a real-life refuge from the ravages of old age and death is here on the Japanese island of Okinawa in the East China Sea.

The Japanese live longer than anyone else, and Okinawans live longer than anyone else in Japan. The Japanese government says 457 Okinawans are at least 100 years old — 34.7 centenarians for every 100,000 islanders, highest ratio in the world. The USA has about 10 centenarians for every 100,000 people. Life expectancy is 81.2 years on Okinawa, longest in

The makings of longevity

Okinawans live longer than anyone else. Life expectancy:

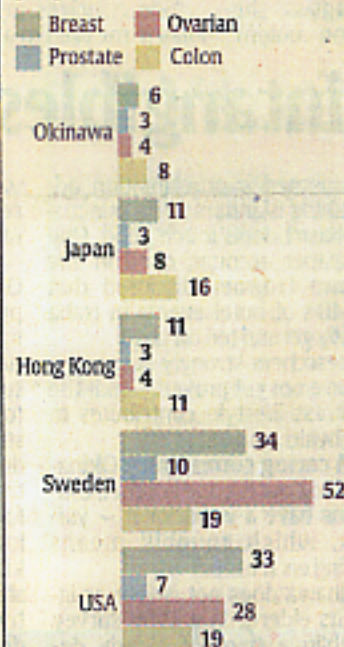
Place (rank)	Life expectancy (years)
Okinawa (1)	81.2
Japan (2)	79.9
Hong Kong (3)	79.1
Sweden (4)	79.0
USA (18)	76.8

Sources: The Okinawa Program from the World Health Organization and the Japanese Ministry of Health and Welfare

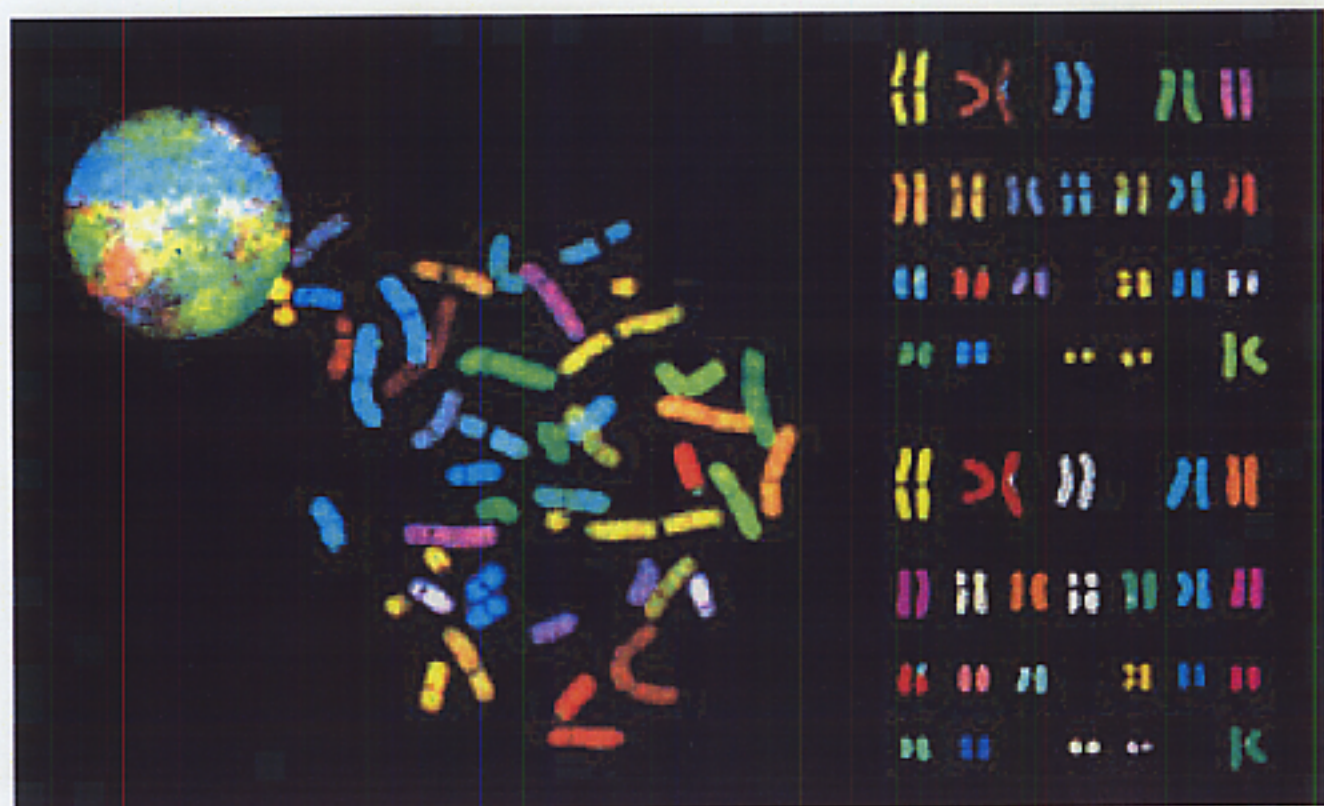
Okinawan elders boast a better-balanced, healthier diet than Americans do. Percentage of diet:

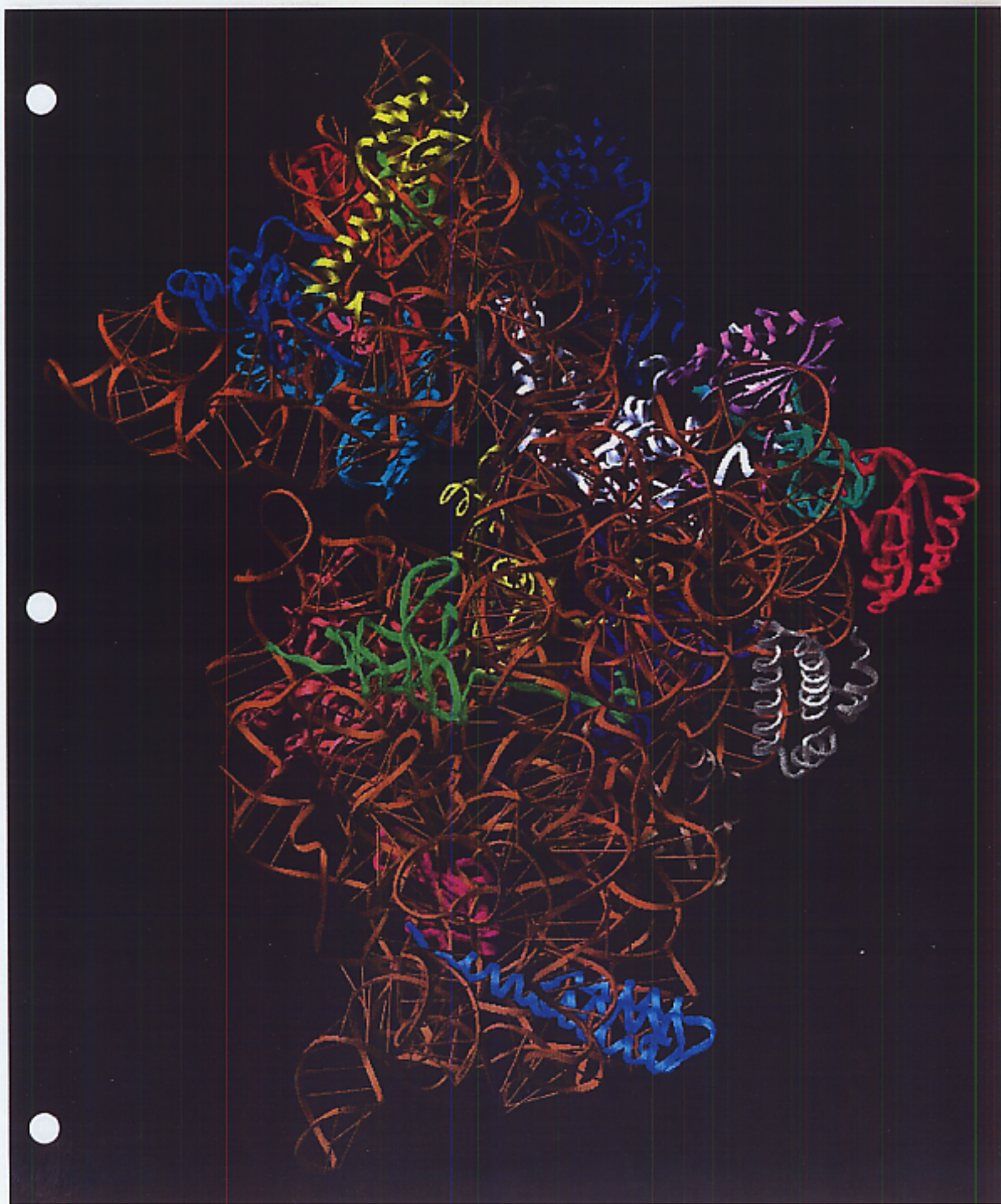
	Okinawan elders	USA
Calcium-rich foods (e.g. dairy)	2%	23%
Flavonoid-rich foods (e.g. soybeans)	12%	less than 1%

The risks of dying from cancer are far lower among Okinawans. Cancer death rates (per 100,000 people):



Source: The Okinawa Program





SLAC Press Release

November 4, 2002

Press Contact:

Neil Calder, SLAC - (650) 926-8707

German and U.S. laboratories to collaborate on the development of X-ray free electron lasers

Washington D.C, November 1, 2002 the Deutsches-Elektronen-Synchrotron (DESY), Germany's leading particle physics and synchrotron radiation laboratory, and the U.S. Department of Energy's Stanford Linear Accelerator Center (SLAC), have signed a Memorandum of Understanding (MoU) to establish a unique international collaboration for the development of X-ray free-electron lasers. These facilities will be a giant leap forward in synchrotron radiation research, generating X-ray pulses ten billion times brighter and a thousandfold shorter in duration than existing sources. These ultra-brilliant beams will explore previously inaccessible realms of dynamics in the chemical, biological and materials sciences as well as in nanoscale phenomenology, and atomic and plasma physics.

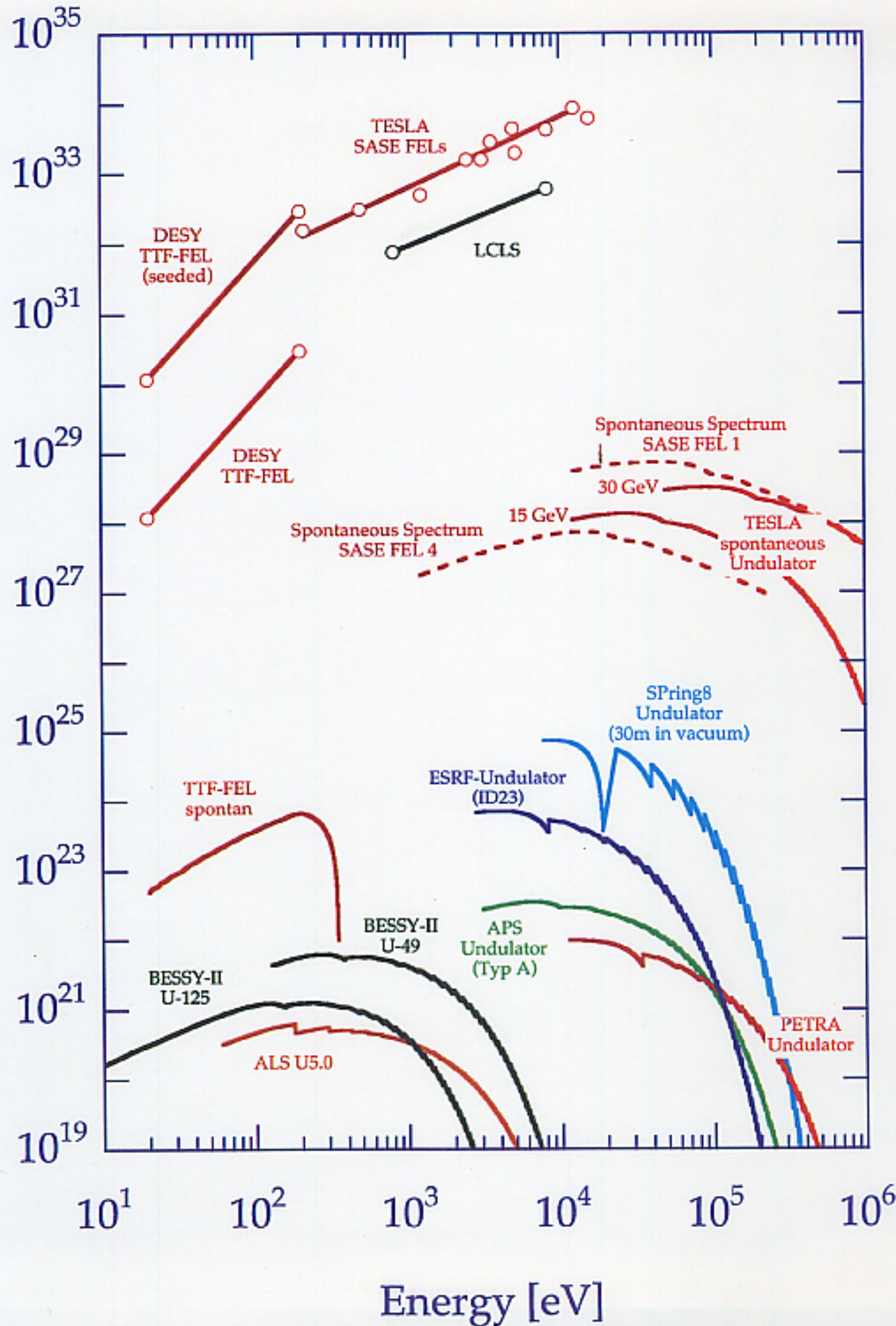
"These machines can be used to observe atoms in the process of forming or breaking bonds in molecules - in effect, freeze-frame photography of molecular formation," said John Galayda, head of the SLAC X-ray free-electron laser project.

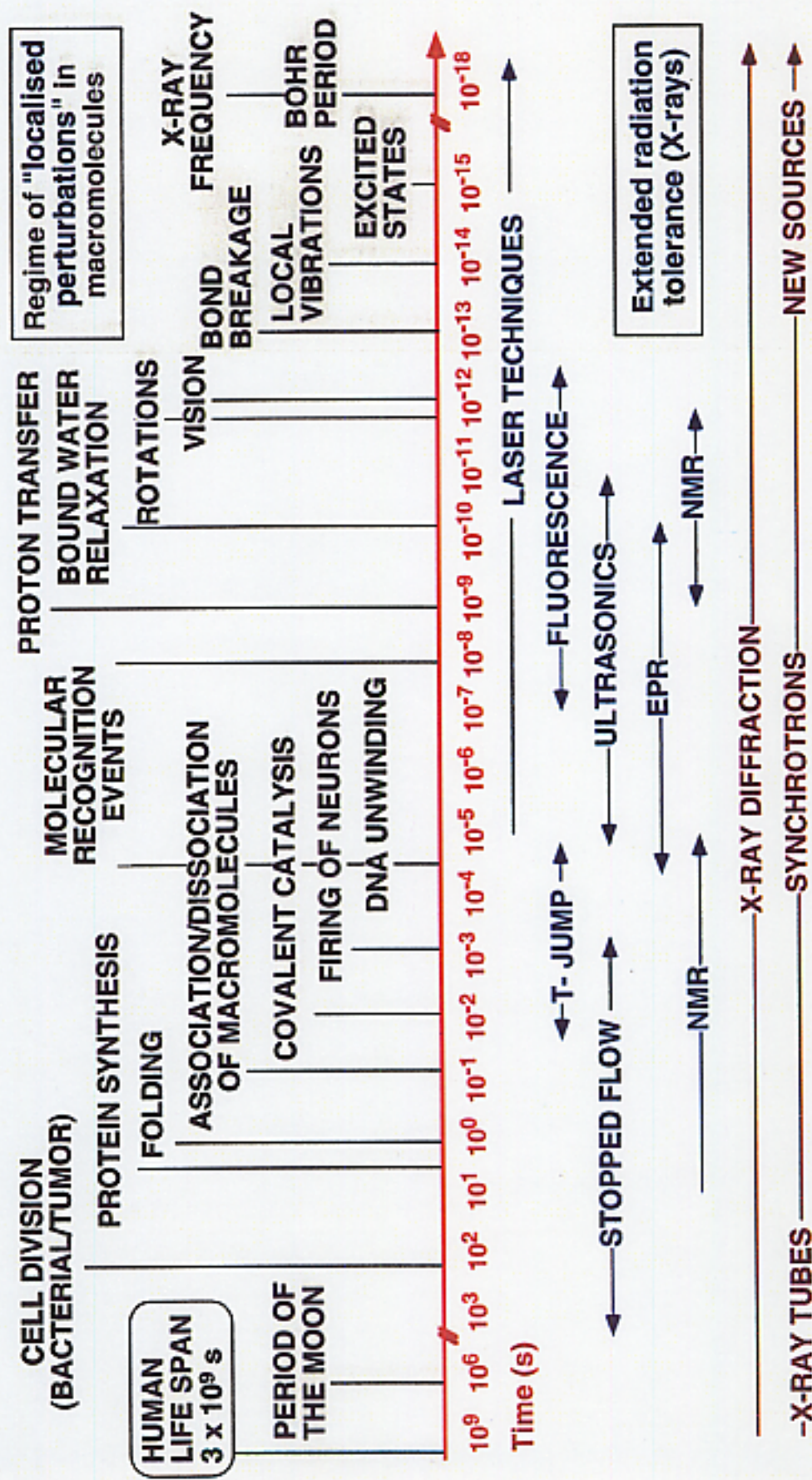
Dr. Raymond Orbach, Director of the Department of Energy's Office of Science, welcomed representatives from the two laboratories. Dr. Hermann Schunk, Director-General of Basic Research, Transport and Aerospace Research commented on the importance of the collaboration for Germany's Federal Ministry of Education and Science. Professor Albrecht Wagner, Chairman of the DESY Board of Directors, Professor Dr. Jochen R. Schneider, DESY Research Director and TESLA-XFEL Project Leader and Professor Jonathan Dorfman, Director of SLAC signed the MoU.

DESY and SLAC are world-leading laboratories in the development and operation of electron accelerators for research in high-energy physics and in the many fields of science that make use of synchrotron radiation. Both institutions are committed to explore the extraordinary scientific capabilities that X-ray free-electron lasers will offer and are advanced in the planning for two facilities - the Linac Coherent Light Source (LCLS) at SLAC and the TESLA X-ray Free Electron Laser (TESLA-XFEL) at DESY. The LCLS project engineering and design has been authorized and the facility is scheduled to become operational in 2008. The TESLA-XFEL is expected to be operational in 2011.

The agreement sets the framework for practical collaboration between DESY and

Peak Brilliance [$\text{Phot./sec} \cdot \text{mm}^2 \cdot 0.1\% \text{ bandw.}$]





International Symposium on

New Horizons in Molecular Sciences and Systems:
An Integrated Approach

October 16 - 18, 2003

Bankoku Shinryokan, Okinawa, Japan

www.okinawasympo2003.jp

Sponsors:

New international graduate university in Okinawa

American Physical Society

European Molecular Biology Organization

Cabinet Office, Government of Japan

Okinawa sympo 2003 Call for Abstracts, Speakers, Participation

Purpose/Theme of the Symposium

- launch the new graduate university
- gather best minds, leading scientists
physics, chemistry, biology, computing,
information & nano sciences and technologies

Special and Keynote Speakers

- Jerome Friedman MIT
- Steve Chu Stanford
- Richard Karp UC Berkeley
- Leroy Hood ISB
- Uri Sagman C - Sixty

International Advisory Committee

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John Doyle	Caltech
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Greg Verdine	Harvard
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3) Nanosciences and Nano-engineering

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Keiichi Namba	U. of Osaka
David Awschalom	UC Santa Barbara
Albert Pisano	UC Berkeley
Wa Chiu	Baylor
Curtis Frank	Stanford
Petros Koumoutsakis	ICOS, Zurich

Important Dates:

Abstract Submission by July 16, 2003

Notification of speakers August 16, 2003

Registration by September 16, 2003

Symposium Logo:

**Gathering of Minds
in Okinawa**

万国津梁館

BANKOKU SHINRYOKAN



A new convention resort amidst enchanting natural surroundings

Okinawa-verdant isles in the azure sea east of the Asian continent

Okinawa-a crossroads of trade since the 14th century, with a vibrant culture enriched by contacts with many nations and peoples.

And now a superb resort appears: a place for world-class conventions in a lush natural setting, a sparkling facility utterly in tune with the new century's innovative spirit.

Globalization 2003 Forum

Okinawa, Japan
November, 2003

Gorbachev Foundation

Promote peaceful resolution of international conflicts

Former President & Peace Nobel Laureate

Mikhail Gorbachev

also inviting

Jimmy Carter

Kim Dae-jung

Suggestions

- “Great framework for us to collaborate with the people and the government of Okinawa”
- Headquarter
Association of Asian Pacific Physics Societies
- Center for Open Source (Software)
- . . .
- Science Park & Tech Valley

Schedule

2003

- Scientific Council
scientific directions
International Trustees
Select President & other leaders
- Campus Design
- Begin Research Funding, Symposium & Workshops

2004

- Begin Construction

September, 2005

- Faculty

September, 2007

- Students

Thanks to

Prime Minister Koizumi

Mr. Omi, Mr. Hosoda, Government of Japan

Professors Friedman, Lederman, & other great scientific leaders

Everyone in Okinawa

Fermi Lab

MIT, Caltech, Stanford, UC Berkeley, UC San Diego,

APS AAPPS EMBO & other organizations

and many other people & institutions internationally

We have Lift - off

Summary

- **Japan government commitment to establish in Okinawa a “best in the world” graduate university**
 - ★ open to the world
 - ★ “green light” with initial funding starting April, 2003
 - ★ strong support from international scientific communities
 - ★ strong support from everyone in Okinawa
 - ★ finish Site selection
 - ★ beginning Campus Design
 - ★ Symposium and Research Funding starting this year
 - ★ Students start in September, 2007
- **Seed, Landmark for new Okinawa as new center of excellence of Asia**

**Thank you very much
for your advice & support**

Please

- Advise
- Suggest, Propose
- Collaborate
- Visit
- Join

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